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ABSTRACT

This study describes trends in student-athletes' academic performance before and after the passage of National Collegiate Athletic Association Proposition 48 which reformed initial-eligibility rules for student athletes, requiring that they have achieved minimum high school grade point averages (at least a 2.0 on a 4.0 system) in core courses and minimum college entrance examination test scores (700 on the SAT or 15 on the ACT) to be eligible for college athletics during their first year. The data for the study cover the college careers of five cohorts who entered college as freshmen from 1984 to 1988 in Division I schools. Cohort trends in student groups show that white student-athletes accounted for 75 percent of the sample. There was a noticeable drop in the percentage of black student-athletes between the initial 1984 level (25.7 percent) and the 1986 cohort (17.9 percent), with subsequent increases in 1987 (20.6 percent) and 1988 (21.8 percent), and these declines were most noticeable for black males in revenue sports. Only minor cohort differences were seen in academic persistence. A look at trends in graduation rates found that the overall graduation rate for student-athletes generally increased. Examination of trends in college grade point averages (GPA) revealed a slightly higher college GPA for the most recent cohorts and noticeable differences among subgroups, with the female student-athletes doing the best and the black student-athletes performing worst. Data are presented in extensive tables and figures. (JB)

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ED 381 045

NCAA Research Report

93-01

Cohort Trends in College Academic Performances of 1984-88 Freshman Student-Athletes

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FOREWORD

This report is the eighth in a series that we shall be publishing to inform our member institutions and others about our study of student-athletes' academic performance under Bylaw 14.3.

The results presented are preliminary. This study was begun in 1985 and still has several years before completion.

We welcome your comments and suggestions on this report.

CEDRIC W. DEMPSEY
NCAA Executive Director
June 1994

THE NATIONAL COLLEGIATE ATHLETIC ASSOCIATION

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INTRODUCTION

For the past five years, the NCAA has been conducting a study of the academic performance of selected Division I student-athletes. The Academic Performance Study (APS) was started in 1985 by the NCAA Research Committee, and is an ongoing research project of the NCAA staff. More details on this study are presented in other reports (see NCAA Research Report No. 90-01). The APS database covers aspects of the college careers of five cohorts of almost N=10,000 Division I student-athletes. This study presents descriptive information on the collegiate academic performances of these student-athletes. The focus is on a description of initial trends of student-athletes' performances in the five cohort groups who entered college as freshmen from 1984 to 1988.

These student-athlete data were obtained under different initial and continuing-eligibility rules. The initial 1984 and 1985 cohorts entered as freshmen under the least restrictive national rules. Students were declared eligible as college freshmen if they graduated from high school with at least a 2.000 overall grade-point average (GPA). In 1986-87, Division I implemented legislation (commonly known as "Proposition 48") that required a prospective student-athlete, who had graduated from high school, to present a 2.000 GPA in 11 academic core courses (e.g., English, math, science) and a minimum SAT score of 700 or ACT score of 17 (1993 scale). If these criteria were met, the student-athlete was declared eligible for competition, practice and athletically related aid immediately upon enrollment. These minimum requirements were gradually phased in by 1988-89. Division I student-athletes who did not meet these minimum requirements were precluded from participating in practice and competition during their first academic year in residence.

This report does not provide complete statistical analyses about changes over time, or on the specific impacts of these changes in eligibility rules. Any inferences about changes in rates (or means) over time are based on the comparison of the different students in different schools in the five cohorts, and this raises complex questions for future analyses (i.e., How do we form an adequate comparison group?). Thus, these student-athlete data need to be considered in some detail before adequate statistical inferences about longitudinal and cohort effects can be reliably made. The statistical information reported here can be used only as an initial summary of the 10 years of APS cohort data.

SCHOOL SAMPLING DIFFERENCES

The APS data form (for more details see NCAA Research Report No. 90-01) was sent to a college representative at a stratified random sample of 57 Division I institutions in each of the five years 1984-1988. This person was asked to provide data on each student-athlete in a specified freshman class. Table 1 on page 10 gives a comparison between these five cohorts of schools on several characteristics. The first line

shows the number of survey respondents, which reveals a range of participation in the APS. The response rate for 1984 (73.7 percent) and 1985 (71.9 percent) was generally lower than in the last three years (89.5 percent, 84.2 percent, and 77.2 percent).

Table 1 also compares these schools on several other college characteristics obtained from the recent NCAA graduation-rates disclosure form (1992-93). The variables listed include school characteristics, such as the percentage of colleges in Division I-A, percentage of private schools, and percentage of historically black colleges. There are a few notable differences here, especially the lack of private (21.4 percent) and historically black colleges (2.4 percent) in the 1985 cohort. The size of the colleges within a cohort is given by the average number of undergraduates within each school in 1992. The size is similar among the cohorts. (The variation in average school sizes is indexed by the standard deviation listed.)

The undergraduate characteristics section presents a breakdown of the average overall student body within each cohort. First, the percentage of black students and female students is listed. The percentage of students in other groups (e.g., males) can be determined directly from the numbers presented in this table, and Figures 1-W and 1-B on page 11 present these in descriptive fashion. Figure 1-W is a plot of the proportion of white students in each of the schools across the five cohorts. Figure 1-B is the same plot for the proportion of black students. These plots show little to no variation in the proportion of students in these cohorts. In general, the five cohorts of schools appear to be comparable on a number of demographic variables.

The 1992 graduation rates reported by each school are presented in the last section of Table 1. The schools within the cohorts seem comparable also, but the institutional graduation rates for the schools sampled in the 1988 cohort may be slightly higher than for the other four years. The 1988 schools report relatively higher rates for all students (63.9 percent) and for the student-athletes (62.1 percent). The standard deviations listed are also large, so these 1988 differences may be within the confidence bounds of sampling fluctuation. Nevertheless, statistical adjustments on institutional graduation rates may be needed to control for this feature of the sampling design in future analyses.

The variations in Table 1 do not reflect any trends over time—these are indicators of small pre-existing differences between the randomly selected schools in our five cohorts (as of 1992). The broad comparability of schools seen permits some interpretations of trends over time from trends over cohorts. However, it also means that any further cohort interpretations are limited by any significant differences in the cohorts on these or other variables.

COHORT TRENDS IN STUDENT GROUPS

The same student-athletes also were studied for each of the next four years using a similar coding form (see NCAA Research Report No. 90-01). For the purposes of the analyses to follow, we had to clean up the individual records. In sequence, we

eliminated persons with (1) incomplete longitudinal records, or (2) missing key high-school variables (i.e., missing both high-school GPA and standardized test score information). We also used only records where the student-athletes were (3) U.S. citizens, and (4) the race/ethnicity question was answered as either "white nonhispanic" or "black." This last selection eliminated a small percentage of student-athletes (three percent) who were either American Indian or Alaskan Native, Asian or Pacific Islander, or Hispanic.

Table 2 on page 12 gives the frequency of different groups of student-athletes in each of the five cohorts. This table first lists the overall frequency of five-year student records available. Here we see the smallest number of records in 1985 (N=1,658) and the largest number of records in 1986 (N=2,435). These are not trends in the number of students in college, but are reflections of the different number of schools reporting on the APS within each year (see Table 1 on page 10).

The proportion of persons in several groups within each cohort are listed in the remaining columns of Table 2. Below each proportion is a "margin of error" in the proportion, and this can be used to form a 95 percent confidence boundary around the proportion. (See technical note in the table; this margin of error is the average of the upper and lower 95 percent confidence boundaries given by the standard formulas). Figures 2-W and 2-B on page 13 are plots of some of the data of Table 2. Figure 2-W plots the proportion of white student-athlete groups in each cohort; Figure 2-B plots the proportion of black student-athlete groups in each cohort.

There are a few key features of these samples. First, the white student-athletes account for 75 percent of the sample. This is also true for most subgroups except in the male revenue sports (i.e., football and men's basketball), where the percentages are much closer. Second, there is a noticeable drop in the percentage of black student-athletes between the initial 1984 level (25.7 percent) and the 1986 cohort (17.9 percent). (Note: The margins of error of ±2.0 percent and ±1.5 percent can be used to determine an approximate 95 percent confidence boundary for either proportion, and these proportions do not overlap). The black percentage increases in 1987 (20.6 percent), and again in 1988 (21.8 percent), but does not reach the initial 1984 level (24.5 percent). These declines are most noticeable for black males in revenue sports but are not found for black females. Third, the percentage of white females seems to be increasing over all cohorts (until 1988). These small differences may be important in further analyses.

COHORT TRENDS IN GRADUATION RATES

One indicator of academic success is college graduation. The complete longitudinal records on the APS student-athletes allow us to determine if a student graduated from the institution of initial enrollment. Table 3 on page 14 gives a breakdown of the graduation status of the APS individuals for up to five years after inital enrollment. The graduation rates listed are not adjusted for possible transfers because, in the APS,

student-athletes who withdrew from college were not followed to another school. Once again, the margin of error is listed below every graduation rate. Figure 3 on page 15 presents the same information in a graphic form.

The overall graduation rate for student-athletes generally increases among these cohorts. For example, the overall graduation rate is 50.8 percent in 1984 and up to 60.1 percent in 1988. This is a large difference. The decline in 1985 to 46.4 percent is possibly due to the composition of the schools in this cohort (see Table 1), especially the lack of private schools, but the decline in 1987 (to 53.2 percent) is not so easily explained.

The overall graduation rates for the white and black student-athletes are different, as displayed in Figure 3-R on page 15; however, the same general trends are seen for both groups, with the black students having an increasing trend over all consecutive cohorts. Figure 3-W on page 15 shows these trends for the white student subgroups, with the white females having the highest graduation rates (73.1 percent ±3.6 percent in 1988). Figure 3-B on page 15 shows these trends for the black student subgroups, where the females exhibit the highest graduation rates (72.2 percent ±9.7 percent in 1988) and the largest difference in trend over consecutive cohorts. Other differences among cohorts are less noticeable.

It is important to remember that the comparison of these graduation rates over time is based on the comparison of the different students in different schools in the five cohorts (of Table 1). Also, the uncertainty (i.e., margin of error) is largest for the groups with the smallest sample sizes. Thus, these changes may reflect a national trend, or an effect due to the changing eligibility rules, but these conclusions are not determinate from these simple overall rates.

COHORT TRENDS IN YEARS OF PERSISTENCE

Another potential indicator of success in college is the amount of time spent in the initial college. In the APS dataset, this information was recorded at the end of each year for up to five years. The data of Table 4 on page 17 and Figures 4-R, 4-W and 4-B on pages 18-19 illustrate the differences among cohorts on this measure of persistence.

The general tendencies show only minor differences among the cohorts, with a slightly longer period of time in school for the most recent cohorts (i.e., from 3.75 ±.07 years in 1984 to 3.84 ±.06 in 1988). In contrast to the other variables presented, there are small differences among the subgroups in years of persistence (see Figures 4-R, 4-W and 4-B).

COHORT TRENDS IN COLLEGE GRADE-POINT AVERAGES

Another common indicator of success in college is the GPA. In the APS dataset, this information was recorded at the end of each year for up to five years. The last cumulative GPA is available for any student no matter what year he or she left school; i.e., no matter when he or she graduated, transferred or dropped out. The data of Table 5 on page 20 and Figures 5-R, 5-W and 5-B on pages 21-22 illustrate the differences among cohorts on this measure of academic performance.

The general tendencies show some differences among the cohorts, with a slightly higher college GPA for the most recent cohorts. There are also noticeable differences among the subgroups in college GPA with the group of female student-athletes doing best, and black student-athletes performing worst (see Figure 5-R, 5-W and 5-B). Particularly noticeable are the big increases for black females and some increases for white females. In contrast, the cohort differences for males are smaller, and in some cases some declines are noticeable (the declines for black males in revenue sports).

FURTHER NCAA RESEARCH

The previous data illustrate the available APS information. Of course, a variety of other data are available to answer more specific questions, and these will be presented in further reports. First, the comparability of the schools among the five cohorts needs to be accounted for in further statistical inferences. Second, other academic performance measures need to be taken into account. Other persistence variables can be examined, including years in major and time until a degree is obtained. Several other GPA variables, such as freshman-year GPA, sophomore-year GPA, or "total quality points," also can be used. Any of these variables can be presented separately for graduates and nongraduates in each subgroup. Other important variables, such as GPA in a major area, or GPA in specific college courses, were not directly measured in the APS survey, so further research on college transcripts may be needed.

In the reports to follow, various statistical techniques will be used to examine the issues raised by the APS design and to better understand the APS results listed. The next report (No. 93-02) will deal with the high-school academic preparation of these student-athletes, and the impacts of the initial-eligibility regulations on the kinds of students in each cohort. Another report (No. 93-03) will deal with the predictive validity of college graduation from high-school grades and standardized-test scores for all of the subgroups described here. Two additional reports (No. 93-04 and No. 93-05) will deal directly with the choice of initial-eligibility rules. Further analyses of these key APS issues are being planned.

TABLE 1

COMPARISON OF DIVISION I SCHOOLS IN THE FIVE FRESHMAN COHORTS OF THE NCAA ACADEMIC PERFORMANCE STUDY

School Variables	FRESHMAN COHORT 1984	1985	1986	1987	1988
1. Schools Participating					
Number Reporting	42	41	51	48	44
Response Rate	73.7%	71.9%	89.5%	84.2%	77.2%
2. School Characteristics					
Division I-A Colleges	48.9%	47.6%	35.2%	42.9%	43.5%
Private Colleges	33.3%	21.4%	42.6%	28.6%	37.0%
Historically Black Colleges	4.4%	2.4%	5.6%	4.1%	6.5%
Number of Undergraduates	1,832	1,782	1,644	1,895	1,760
(Stan. Dev.)	(1,227)	(1,002)	(1,466)	(1,353)	(1,278)
3. Undergraduate Characteristics					
Percent Female Students	51.2%	50.0%	51.2%	51.2%	49.0%
Percent White Females	46.1%	45.7%	45.7%	46.1%	44.0%
Percent Black Students	9.0%	7.7%	8.7%	8.9%	8.5%
Percent Black Females	5.1%	4.4%	4.4%	4.5%	4.1%
Percent Student-Athletes	2.3%	2.5%	2.9%	2.3%	2.4%
4. 1992 Six-Year Graduation Rates					
All Students Grad Rate	57.4%	54.3%	56.4%	54.1%	63.9%
(Stan. Dev.)	(20.7)	(18.4)	(21.4)	(17.8)	(20.5)
Student-Athletes Grad Rate	57.6%	57.7%	56.5%	57.1%	62.1%
(Stan. Dev.)	(18.4)	(17.1)	(18.7)	(16.4)	(16.1)

Notes:

1. Cell entries are aggregates of college-level means or college-level percentages using data from the 1992-1993 NCAA Graduate Disclosure Form.
2. The six-year graduation rates are aggregates of the rates for the 1986-1987 freshman classes within each school as reported by the school.
3. Standard deviations of aggregate graduation rates are listed in parentheses.

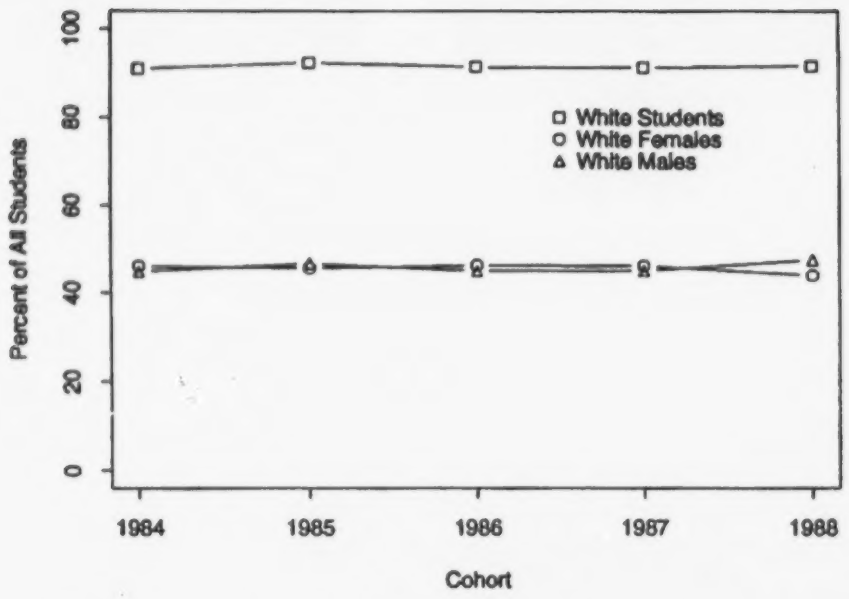

Figure 1-W. Proportion of undergraduate white students by cohort.

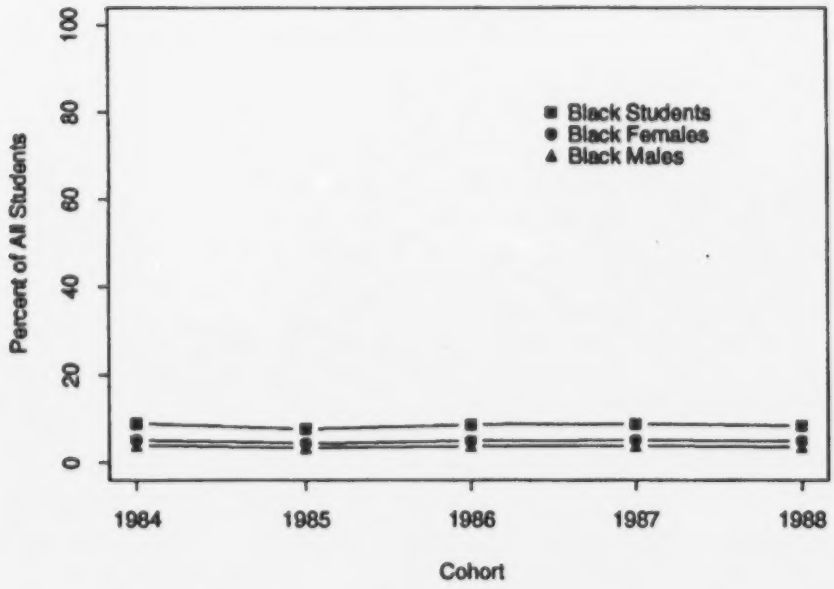

Figure 1-B. Proportion of undergraduate black students by cohort.

TABLE 2

STUDENT-ATHLETES WITH COMPLETE LONGITUDINAL RECORDS SAMPLED WITHIN EACH APS COHORT

STUDENT GROUPS	FRESHMAN COHORT 1984	1985	1986	1987	1988
1. OVERALL NUMBER	1,789	1,658	2,435	1,930	1,981
2. RACIAL GROUPS					
White Student-Athletes	74.3 ±2.0	75.4 ±2.1	82.1 ±1.5	79.4 ±1.8	78.2 ±1.8
Black Student-Athletes	25.7 ±2.0	24.6 ±2.1	17.9 ±1.5	20.6 ±1.8	21.8 ±1.8
3. RACE AND SEX SUBGROUPS					
White Female	24.0 ±2.0	25.2 ±2.1	29.0 ±1.8	26.8 ±2.0	29.3 ±2.0
White Male Revenue	24.3 ±2.0	22.2 ±2.0	22.1 ±1.6	19.2 ±1.8	19.0 ±1.7
White Male Nonrevenue	26.0 ±2.0	28.0 ±2.2	31.0 ±1.8	33.4 ±2.1	29.9 ±2.0
Black Female	4.6 ±1.0	4.3 ±1.0	3.3 ±0.7	4.4 ±0.9	4.0 ±0.9
Black Male Revenue	18.2 ±1.8	15.7 ±1.8	12.3 ±1.3	14.0 ±1.6	15.1 ±1.6
Black Male Nonrevenue	2.9 ±0.8	4.6 ±1.0	2.3 ±0.6	2.2 ±0.7	2.7 ±0.7

Note: First cell entry is proportion within cohort sample.

Second cell entry is margin of error in proportion due to sample size:

Margin of Error = (LOW 95% CI + UP 95% CI)/2;

Confidence Interval = 95% CI = $\frac{N}{N+z^2}\left[P+\frac{z^2}{2N} \pm z\sqrt{\frac{PQ}{N}+\frac{z^2}{4N^2}}\right]$, where $z = 1.96$.

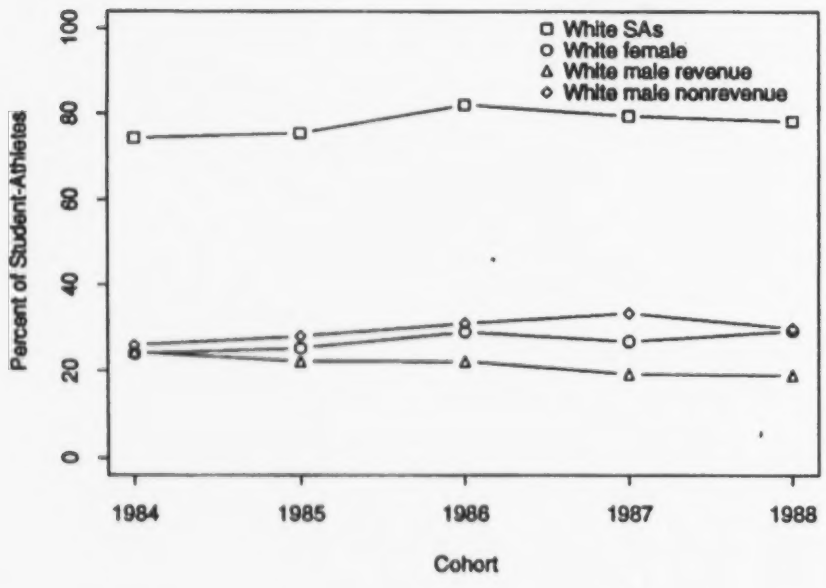

Figure 2-W. Proportion of white student-athletes by cohort.

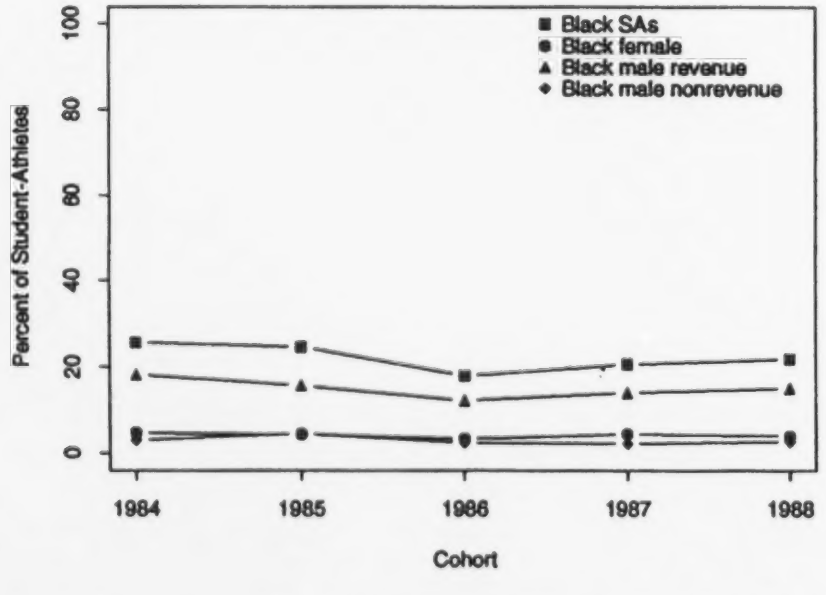

Figure 2-B. Proportion of black student-athletes by cohort.

TABLE 3

FIVE-YEAR COHORT TRENDS IN FIVE-YEAR GRADUATION RATE

STUDENT GROUPS	FRESHMAN COHORT 1984	1985	1986	1987	1988
1. OVERALL	50.8 ±2.3	46.4 ±2.4	56.5 ±2.0	53.2 ±2.2	60.1 ±2.2
2. RACIAL GROUPS					
White Student-Athletes	58.0 ±2.6	51.9 ±2.8	60.2 ±2.1	56.3 ±2.5	64.9 ±2.4
Black Student-Athletes	29.8 ±4.2	29.7 ±4.4	39.4 ±4.6	41.1 ±4.8	42.8 ±4.6
3. RACE AND SEX SUBGROUPS					
White Female	67.6 ±4.4	53.6 ±4.8	69.5 ±3.4	63.4 ±4.1	73.1 ±3.6
White Male Revenue	56.1 ±4.6	58.2 ±5.0	52.8 ±4.2	56.1 ±5.0	63.3 ±4.8
White Male Nonrevenue	51.0 ±4.5	45.5 ±4.5	56.8 ±3.5	50.7 ±3.8	57.8 ±4.0
Black Female	37.3 ±10.2	33.3 ±10.6	63.7 ±10.3	57.1 ±10.4	72.2 ±9.7
Black Male Revenue	27.4 ±4.8	30.4 ±5.6	33.4 ±5.3	37.3 ±5.7	36.7 ±5.4
Black Male Nonrevenue	32.7 ±12.4	23.7 ±9.4	36.8 ±12.1	33.3 ±13.7	34.0 ±12.4

Note: First cell entry is five-year unadjusted graduation rate within cohort sample.

Second cell entry is margin of error in proportion due to sample size:

Margin of Error = (LOW 95% CI + UP 95% CI)/2;

Confidence Interval = 95% CI = $\frac{N}{N+z^2}\left[P+\frac{z^2}{2N} \pm z\sqrt{\frac{PQ}{N}+\frac{z^2}{4N^2}}\right]$, where $z = 1.96$.

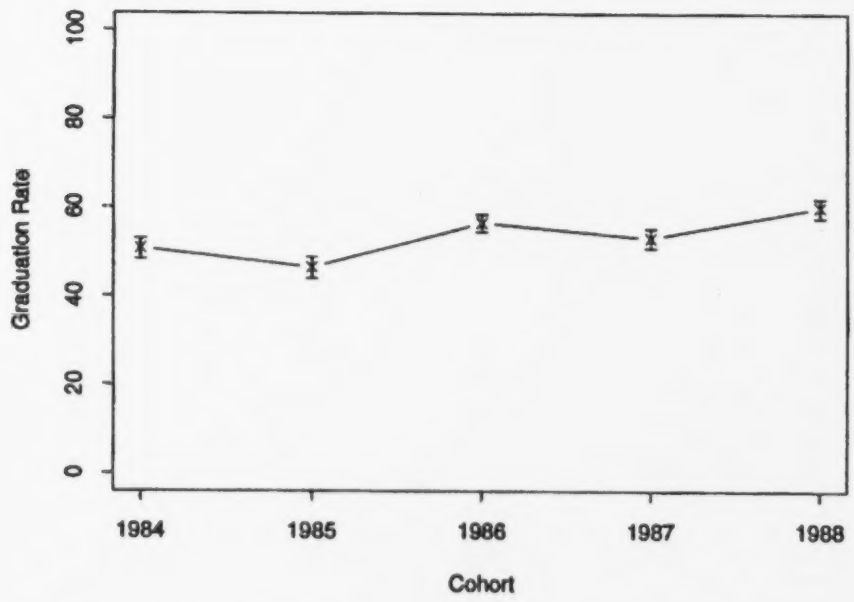

Figure 3. Graduation rates of student-athletes by cohort.

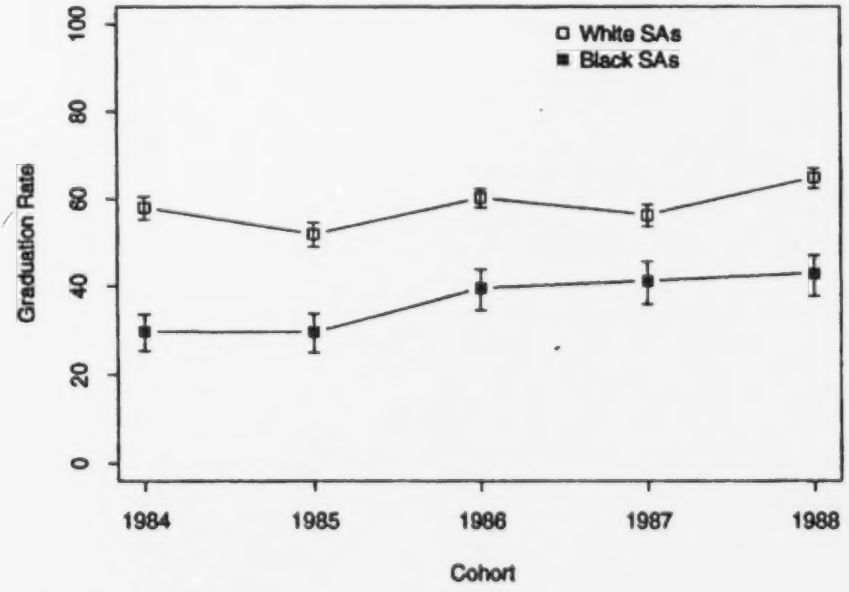

Figure 3-R. Graduation rates of student-athletes by cohort and race.

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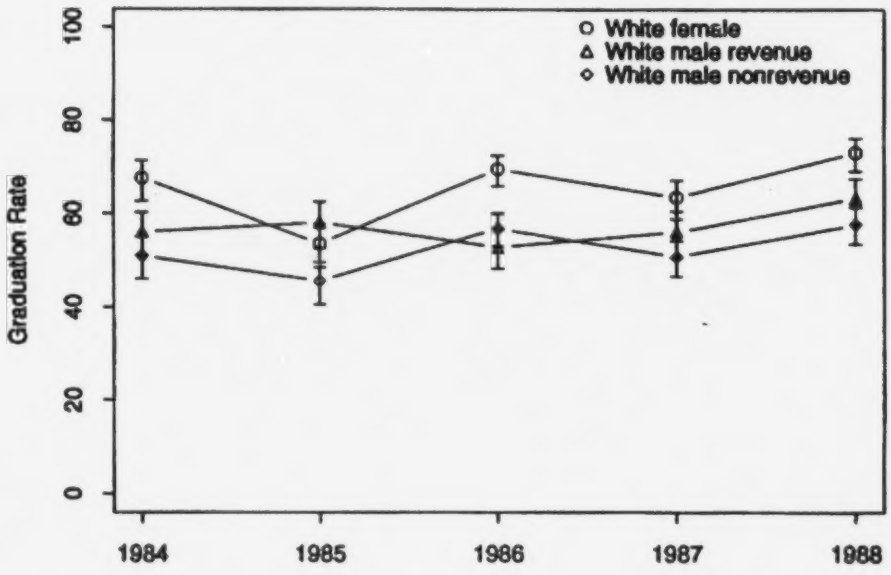

Figure 3-W. Graduation rates of white student-athletes by cohort.

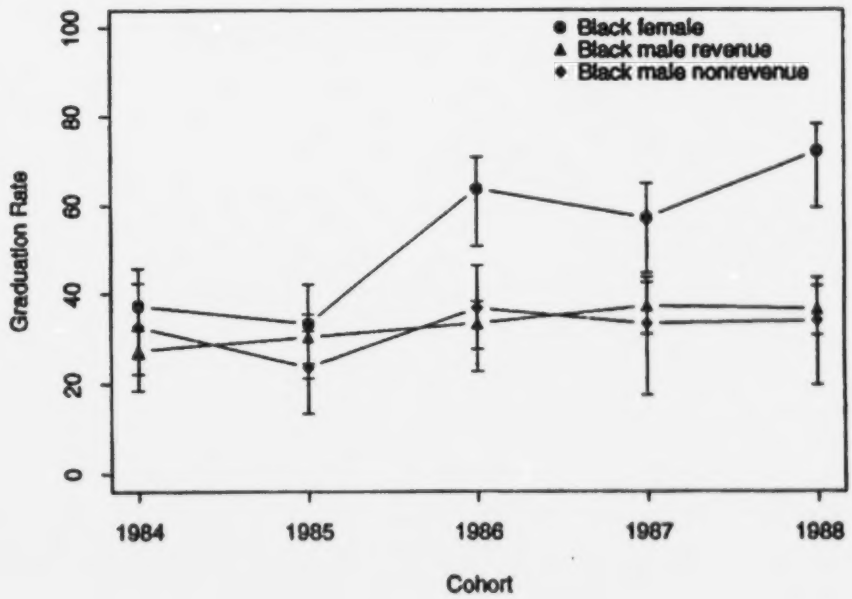

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Figure 3-B. Graduation rates of black student-athletes by cohort.

TABLE 4

FIVE-YEAR COHORT TRENDS IN YEARS OF PERSISTENCE IN COLLEGE

STUDENT GROUPS	FRESHMAN COHORT 1984	1985	1986	1987	1988
1. OVERALL	3.75 ±0.07	3.60 ±0.07	3.75 ±0.06	3.73 ±0.06	3.84 ±0.06
2. RACIAL GROUPS					
White Student-Athletes	3.76 ±0.08	3.63 ±0.08	3.74 ±0.06	3.69 ±0.07	3.86 ±0.07
Black Student-Athletes	3.74 ±0.14	3.51 ±0.15	3.82 ±0.15	3.87 ±0.14	3.78 ±0.14
3. RACE AND SEX SUBGROUPS					
White Female	3.89 ±0.12	3.44 ±0.14	3.86 ±0.09	3.78 ±0.12	3.90 ±0.10
White Male Revenue	3.79 ±0.14	3.89 ±0.14	3.64 ±0.13	3.84 ±0.14	3.83 ±0.14
White Male Nonrevenue	3.61 ±0.13	3.60 ±0.13	3.69 ±0.10	3.53 ±0.11	3.84 ±0.11
Black Female	3.72 ±0.33	3.46 ±0.38	3.89 ±0.32	3.83 ±0.28	4.13 ±0.27
Black Male Revenue	3.80 ±0.16	3.70 ±0.18	3.84 ±0.18	3.87 ±0.18	3.68 ±0.18
Black Male Nonrevenue	3.38 ±0.44	2.91 ±0.36	3.58 ±0.44	3.95 ±0.50	3.83 ±0.44

Note: First cell entry is the mean number of years of persistence in college.

Second cell entry is the 95% confidence boundary of the years of persistence:

95% CI = $1.96 \cdot \sigma_m = 1.96 \cdot \sqrt{\sigma^2/(n-1)}$ where n is the sample size and σ^2 is the variance of the sample.

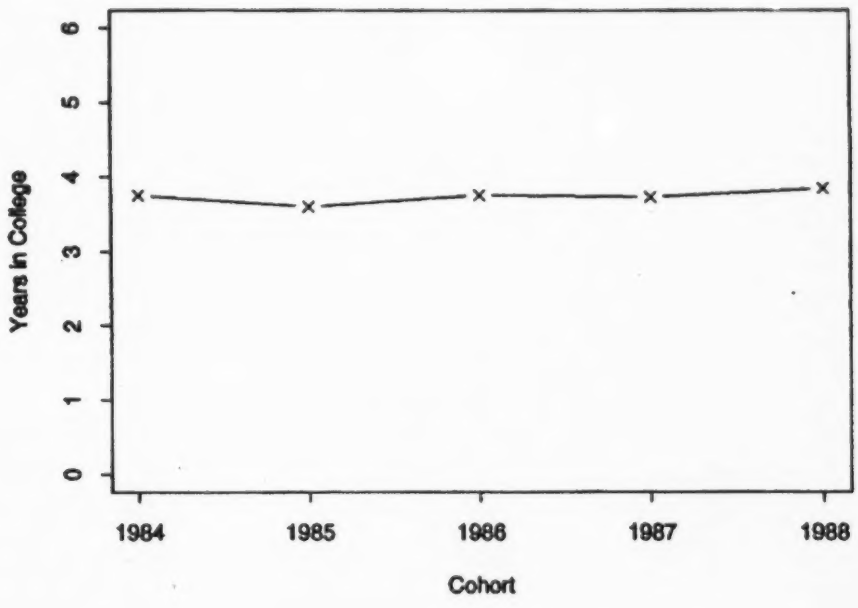

Figure 4. Years of persistence in college of student-athletes by cohort.

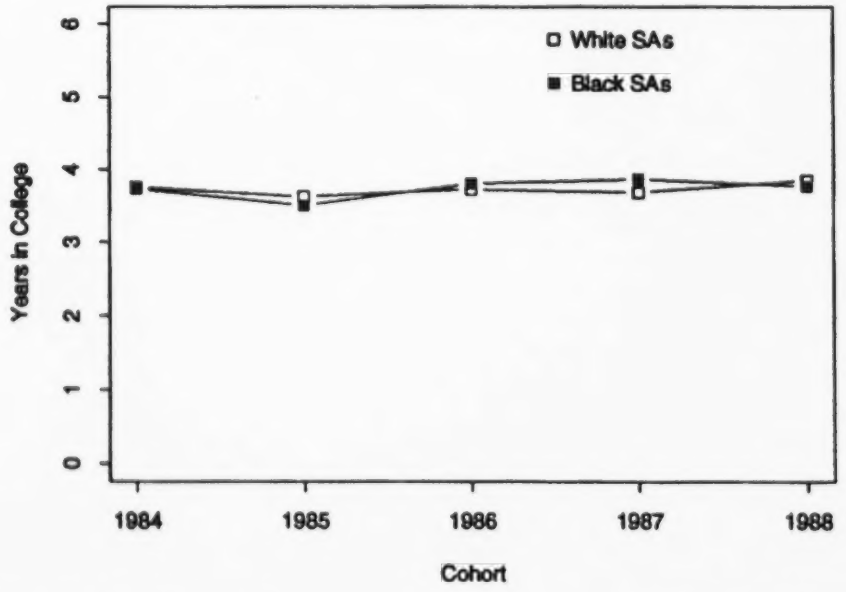

Figure 4-R. Years of persistence in college of student-athletes by cohort and race.

Note: Error bars were not plotted, since each symbol is approximately the same size as the interval delineated by the corresponding error bars.

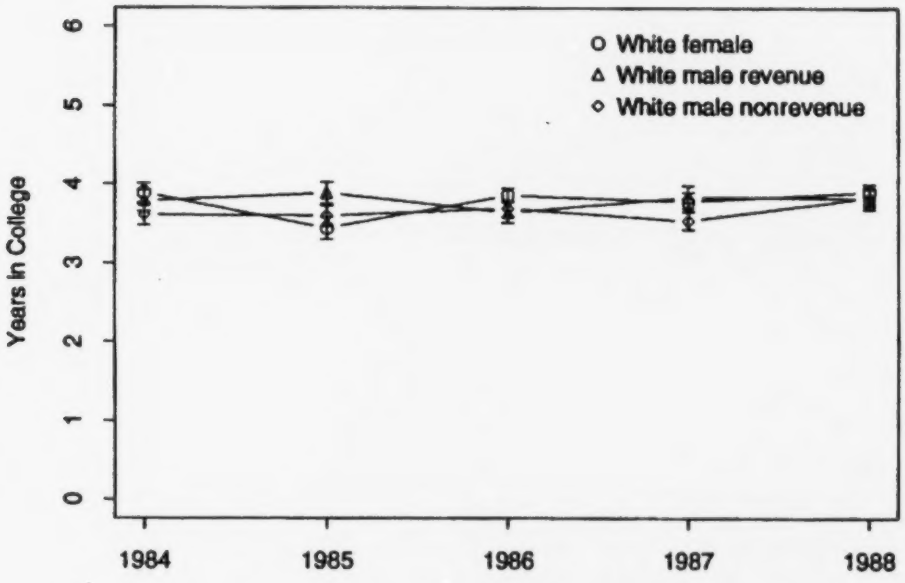

Figure 4-W. Years of persistence in college of white student-athletes by cohort.

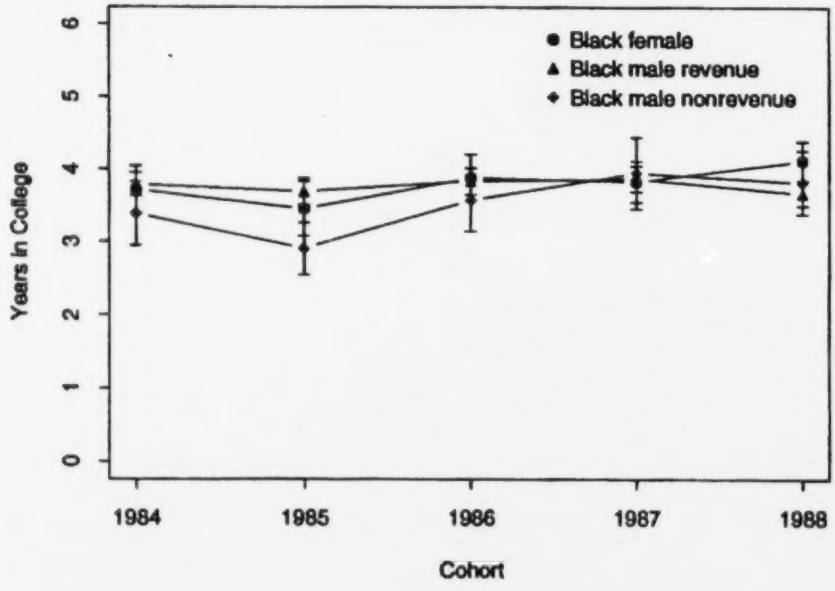

Figure 4-B. Years of persistence in college of black student-athletes by cohort.

TABLE 5

FIVE-YEAR COHORT TRENDS IN CUMULATIVE COLLEGE GPA

STUDENT GROUPS	FRESHMAN COHORT 1984	1985	1986	1987	1988
1. OVERALL	2.44 ±0.03	2.41 ±0.03	2.61 ±0.02	2.51 ±0.03	2.62 ±0.03
2. RACIAL GROUPS					
White Student-Athletes	2.59 ±0.03	2.54 ±0.04	2.69 ±0.03	2.60 ±0.03	2.75 ±0.03
Black Student-Athletes	2.00 ±0.05	1.99 ±0.06	2.25 ±0.05	2.16 ±0.05	2.15 ±0.05
3. RACE AND SEX SUBGROUPS					
White Female	2.81 ±0.05	2.70 ±0.06	2.90 ±0.04	2.85 ±0.05	2.93 ±0.04
White Male Revenue	2.44 ±0.05	2.47 ±0.05	2.45 ±0.05	2.48 ±0.06	2.55 ±0.05
White Male Nonrevenue	2.51 ±0.06	2.46 ±0.06	2.66 ±0.04	2.46 ±0.05	2.69 ±0.05
Black Female	2.12 ±0.13	2.11 ±0.14	2.54 ±0.12	2.39 ±0.14	2.48 ±0.10
Black Male Revenue	1.99 ±0.05	2.00 ±0.07	2.17 ±0.06	2.10 ±0.05	2.05 ±0.06
Black Male Nonrevenue	1.92 ±0.16	1.85 ±0.16	2.25 ±0.14	2.12 ±0.15	2.19 ±0.16

Note: First cell entry is the cumulative GPA in final year in college.

Second cell entry is the 95% confidence boundary of the calculated sum GPA:

95% CI = $1.96 * \sigma_m = 1.96 * \sqrt{\sigma^2/(n-1)}$ where n is the sample size and σ^2 is the variance of the sample.

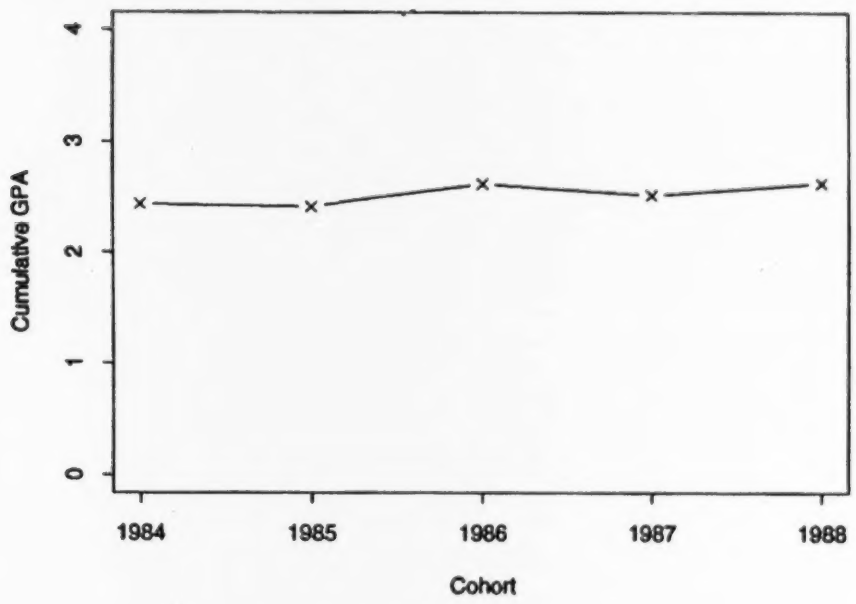

Figure 5. Cumulative college GPA of student-athletes by cohort.

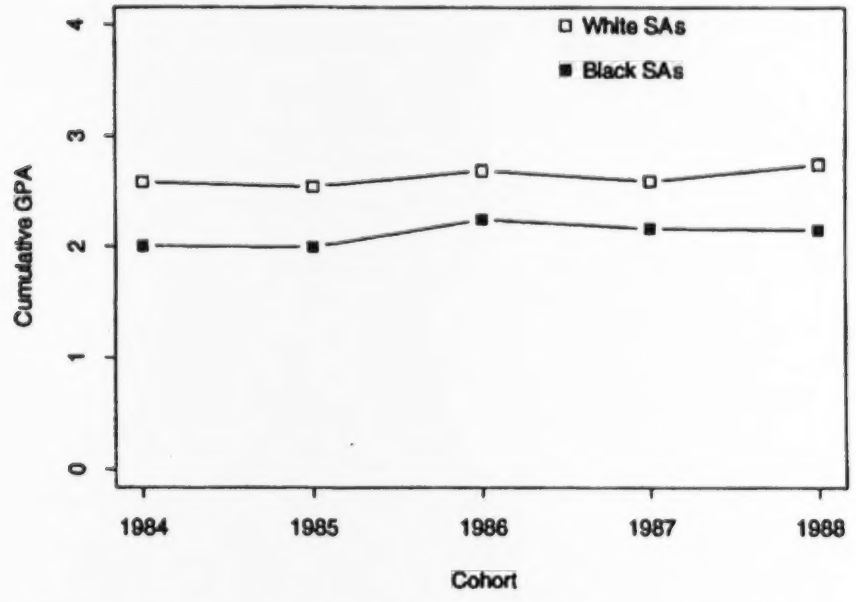

Figure 5-R. Cumulative college GPA of student-athletes by cohort and race.

Note: Error bars were not plotted, since each symbol is approximately the same size as the interval delineated by the corresponding error bars.

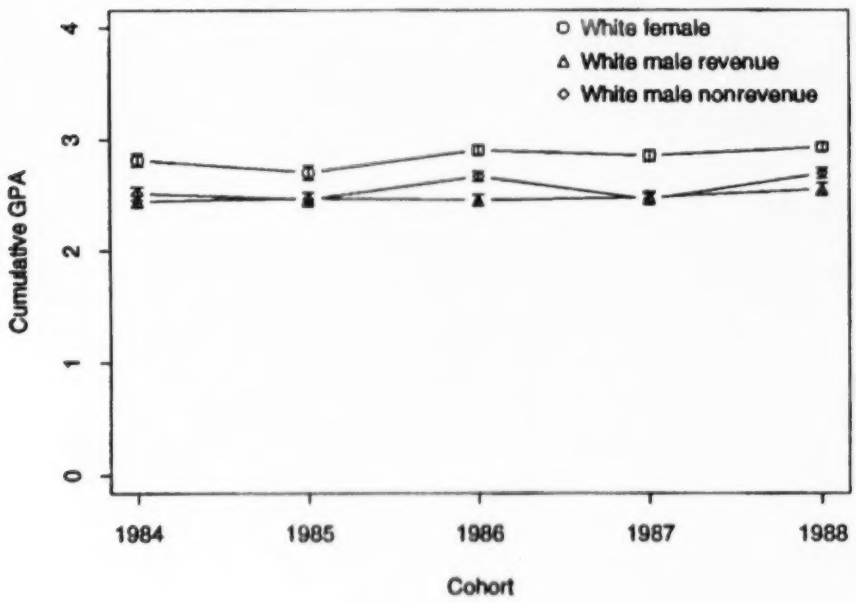

Figure 5-W. Cumulative college GPA of white student-athletes by cohort.

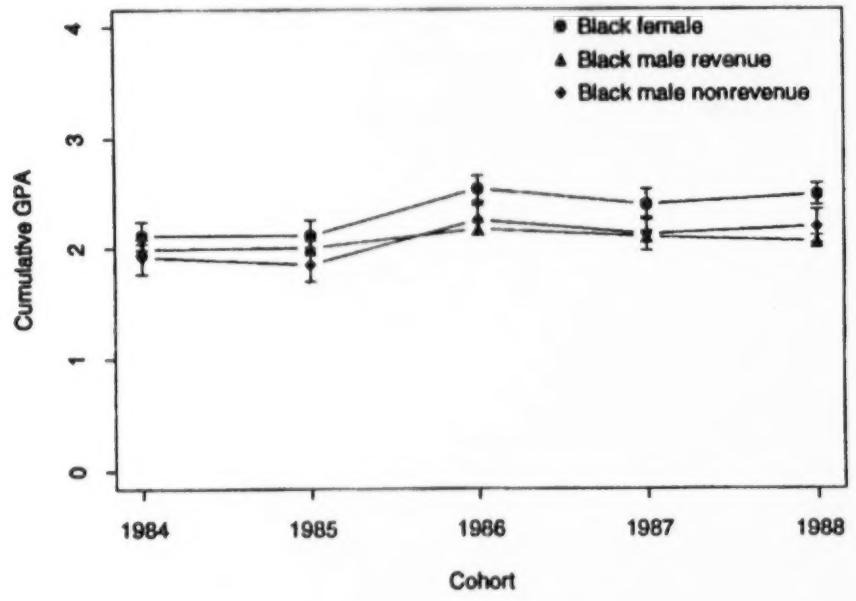

Figure 5-B. Cumulative college GPA of black student-athletes by cohort.

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